

#HEALTH

DEATH AT THE PLAYGROUND

WHEN DOGS STOP BEING OUR BEST FRIEND



ARTEM CHEPRASOV ■ ANIMAL GURU

DEATH AT THE PLAYGROUND

Summer is virtually here! (Honest!) We'll soon be enjoying fun in the sun at the park, beach, and playground. However, what could begin as a happy sun-filled day may end with a blinding loss of vision for you or your loved ones. Shocked? How about this then: your own dog may play a role. Your child could even die.



The cause of this mayhem is nothing more than a worm – one so small you can sometimes only see it with a microscope. This parasite (called a helminth) actually has a cute name: the roundworm. Most roundworms pick one species to call home. This host animal's digestive tract is essentially the centre of operations for the roundworm's needs, including feeding and reproduction. Not a pretty place to call home.

In most developed nations, human roundworm infestations are **uncommon**. Rather, the trouble lies with roundworm infections in other creatures – dogs, cats, raccoons, or wild animals roaming the nearby woods. And if you thought living in partially digested animal food was sickening, it gets worse...

Should an infective roundworm egg that has been deposited in an animal's faeces be eaten by a human, it can hatch within our intestines and release baby roundworms called larvae (or larva, if there's just the one). These larvae will penetrate the intestinal wall, travel to our liver, then our lungs, and from there will spread all over our body.

This internal worm-infection is formally called larva migrans – referring to the migration of worm babies inside our body. The larvae can commonly spread to organs like our **brain**, heart, lungs, liver and eyes.

According to Dr. Allan J. Paul, Veterinarian, Associate Dean, and Chair Professor of Parasitology and Pathobiology at the University of Illinois College of Veterinary Medicine, the principal cause of visceral larva migrans in the U.S. is *Toxocara canis*, the dog roundworm. "3-6 million people in the U.S. are infected with *Toxocara larva migrans* each year," Dr. Paul says. "Between 4.6% and 23% of U.S. children have been infected with the dog roundworm, depending on geographic location. In some places in the world, such as Colombia, up to 81% of children have been infected with *Toxocara canis*."

If you are unfortunate enough to put soiled fingers in your mouth and consume an infective egg, it's likely that the larvae will enter your tissues. But do not despair! If the roundworm egg isn't human-specific – like the dog roundworm – you will usually experience no clinical signs and minimal damage: your immune system will essentially seal off (or 'encapsulate') the roundworm larvae that have penetrated you. This encapsulation will either kill the larvae or, more worryingly, cause them to lie dormant. And there's the one catch, according to Dr. Paul: the larvae can lie dormant for years, springing to life and coming out to get you when your immune system is weak or busy fighting another serious disease.

Cute in name, but not in nature

Roundworm infestations that affect the internal organs are called **visceral larva migrans** ('viscera' refers to our body's organs). A special case of visceral larva migrans, when the larvae target the **eye**, is called **ocular larva migrans**.

But why do larvae migrate specifically to organs like our eyes and brain? The simple answer is: we don't know. However, the fact that only a few eggs are necessary to cause an infection may be one reason why the larvae can migrate all over your body without being detected or destroyed: there are just not enough of them to alert your body to launch an immune response big enough to kill them off.



ABOVE:
Not pleasant: an
adult roundworm
taken from a
puppy.

Invincible and Deadly – this critter isn't kid-friendly

Unlike us, children are far more likely to succumb to larva migrans. A naturally weaker immune system can be one reason why they may be unable to effectively seal off the larvae. (That's not to say adults can't succumb to larva migrans; they can – and do. It's just that children seem to be more predisposed.)

Another reason for the tendency of children to get the worst of a roundworm infection can be their 'risky' behaviors: putting objects contaminated with roundworm eggs, such as dirt, grubby hands, or toys that have been liberally rolled around in dirt, into their mouths. Unfortunately, public areas where children frequently play are often riddled with roundworm eggs. Dr. Paul explains: "Each adult canine roundworm can lay 200,000 eggs inside a dog every day! The eggs then pass in a dog's feces and, in warm, humid weather, will develop into an infective egg in 3-4 weeks." Dr. Paul reports one study in which about 20% of soil samples in parks and playgrounds were found to contain roundworm eggs. Not only are roundworm eggs widespread but, once in the environment, they are very resistant to destruction. In fact, there is no known chemical cleaning agent that can kill them.

If that wasn't bad enough, only a few roundworm eggs are thought necessary to cause an infection in the first place. Visceral larva migrans is most commonly seen in children aged 1-4 who have a history of eating dirt. But ocular larva migrans is most commonly seen in kids who are 7-8 years old and have no history of dirt-eating (or other risky behaviors). It may be that, in these children, the accidental ingestion of just a tiny number of roundworm eggs is enough for larva migrans to occur.

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Regardless of their way in, the consequences of roundworm egg ingestion can be severe. Once larva migrans does occur, the migrating larvae can cause damage to literally any part of your body. The inflammation your immune system triggers when it detects the larvae can lead to even worse consequences, including permanent vision loss. In some rare cases it can even cause death due to the destruction of the brain or heart.

How to protect yourself against the evil worm

Dogs may be man's best friend (and I'm certainly not going to stop loving Mocha, my German Short-haired Pointer) but their poo certainly isn't. Eradicating your garden could only feasibly be done with boiling water (heat kills worm eggs instantly) and this is far from an ideal solution. The moral of the story is simple: watch your kids at the playground. Make sure they're not putting dirty hands, objects, or soil in their mouth. Wash and cook your food thoroughly, and make sure you wash your hands frequently.

And don't just look after yourselves: look after your pets, too. If you have a kitten or puppy, make sure they are dewormed as soon as possible. Clean up after them as soon as they do their business – don't wait for the kitty litter or backyard soil to become infested with roundworm eggs. It may seem like a chore – but do it every day. It may help to save your vision, your child, and your life.

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Born in St. Petersburg, Russia, **Artem Cheprasov** moved to the U.S. when he was a little boy. So no, he is not a spy. Or is he? He finished his studies in veterinary medicine in the top 10% of his class, conducted research, and discovered a cool mathematics algorithm; but we cannot confirm this as both Washington and Moscow have refused to comment on this matter because he really is a spy or, more likely, they have no idea who he even is.

